5.4.2.1 Effluent Limits/Water Quality Based Effluent Limits/ Water Quality Reviews/Conservative Pollutants

Applicability:

Pollutants are classified into various categories. Two pollutant categories are conservative and non-conservative reflecting the rate they are transformed or degraded within the environment.

Content:

According to 10 CSR 20-2.010(55), a pollutant is any "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewer sludge, munitions, chemical waste, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, filter backwash or industrial, municipal or agricultural waste discharged into water."

For the purpose of implementing the NPDES program, EPA categorized pollutants which are expected to be discharged from point sources into the following categories:

- **Conventional Pollutants** – Pollutants typical of municipal sewage and for which municipal secondary treatment plants are typically designed; defined by Federal Regulation as BOD, TSS, fecal coliform bacteria, oil and grease, and pH [40 CFR §401.16].
- **Non-Conventional Pollutants** – All pollutants that are not included in the list of conventional or toxic pollutants in 40 CFR Part 401. These include chemical oxygen demand, total organic carbon, nitrogen, and phosphorous.
- **Toxic Pollutants** – Pollutants or combinations of pollutants, including disease-causing agents, which after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions, (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring. Toxic pollutants include, but are not limited to, the one hundred twenty-six (126) priority pollutants identified by EPA pursuant to Section 307(a) of the federal Clean Water Act or any pollutant listed under Section 405(d) which relates to sludge management.
- **Priority Pollutants** – Those pollutants considered to be of principal importance for control under the CWA. A list of these pollutants is provided as Appendix A to 40 CFR Part 423.

In addition to the classification scheme outlined above, pollutants are also categorized by their ability to be transformed or degraded within the environment. The two terms commonly used are:

- **Conservative Pollutants** – Pollutants that are not normally physically or chemically transformed to non-toxic substances in the receiving water. These include, but are not limited to, salts and metals.
- **Non-Conservative Pollutants** – Pollutants that are transformed to non-toxic substances through physical, chemical, or biological processes in the receiving water. These include biochemical oxygen demand, ammonia, and certain other organic compounds.

Conservative pollutants tend to be stable, long-lived compounds that persist within the environment. Non-conservative pollutants can transform or degrade into other compounds, but the rate of transformation depends on the physical, chemical, and biological conditions occurring

within the receiving water environment. Knowledge of the conservative or non-conservative nature of a pollutant can be important, especially when determining whether a particular wasteload allocation or modeling strategy can be used to establish effluent limits protective of water quality.

Regardless of pollutant type, technology-based effluent limitations are the minimum level of control that must be imposed in a discharge permit issued by the state. Where technology-based limits are known to cause or contribute to a violation of water quality standards, water quality-based effluent limitations are required. Modeling strategies are typically employed to arrive at water quality-based effluent limitations for non-conservative pollutants (e.g. BOD and Ammonia Nitrogen) since these pollutants degrade within the natural environment. Conservative pollutants, however, are more difficult to model and more protective modeling approaches must be taken to ensure water quality standards are maintained.

Legal References:

Code of State Regulations

10CSR 20-2.020(55)	Definitions - Pollutant

Code of Federal Regulations:

40 CFR 401.16	General Provisions - Conventional pollutants.
40 CFR 423, Appendix A	Steam Electric Power Generating Point Source Category

Other Links:

Key Words:

Conservation pollutant, non-conservative pollutant, conventional pollutant, non-conventional pollutant, priority pollutant, toxic pollutant

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